8/11/1994

REVISED LOG OF MEETING
DIRECTORATE OF ENGINEERING SCIENCES

SUBJECT: Ground-Fault Circuit-Interrupters (GFCIs)

DATE OF MEETING: August 11, 1994

PLACE OF MEETING: Underwriters Laboratories, Melville, NY

LOG ENTRY SOURCE: Erlinda M. Edwards, ESEE

COMMISSION ATTENDEES:
Ron Medford, EXHR
Bill King, ESEE
Linda Edwards, ESEE

NON-COMMISSION ATTENDEES:
Don Talka, UL
John Konz, UL
Paul Orr, UL
O. Jackson, Technology Research Corp.
S. Rosenbaum, Leviton Manufacturing Co.
T. Packard, Pass & Seymour
S. Vastagh, NEMA
J. Wells, Pass & Seymour
T. McDonald, Hubbell
W. Rose, Hubbell
J. Young, Siemens
J. Pauley, Square D Co.
H. Leopold, Eagle Electric Co.
And other members and guests of UL's Industry Advisory Conference

SUMMARY OF MEETING:

1. Standardized Terminal Markings for GFCI Receptacles

UL proposed that terminal markings be standardized to "Line" and "Load", and "Hot" and "White". Tom Packard, Pass & Seymour, stated that inspectors were satisfied with these traditional markings, in conjunction with the label. Ron Medford pointed out that, based upon the usability study just completed, the terms "Line" and "Load" mean very, very little to consumers. Bill King, while agreeing that it was important to get a label on the GFCIs as soon as possible, believed that improved wording, as identified by CPSC Human Factors staff, would provide the best communication.

Although the terms "Hot" and "White" are proposed for identification of the wire to be attached to the terminal, Tom McDonald, Hubbell, was opposed to the term "White" for identification of the neutral conductor. The Hubbell GFCI distinguishes Line side and Load side conductors by attaching color-coded pigtail wires to their device. The Load-side neutral conductor is grey, and he was afraid of misinterpretation by consumers.

It was agreed that, for GFCIs which have leads attached, the term "Grey" could be substituted for "White." The terms "Line" and "Load" will be used.

2. Receptacle-Type GFCI Installation Instructions

UL proposed the development of generic installation instructions. Mr. King suggested that a contractor be hired to develop instructions which would provide the best communication for installation procedures. Mr. Packard agreed that the skill required to write instructions was outside the industry or UL. NEMA was in favor of formation of a task force, under NEMA's direction, to find an expert who could develop a consumer instruction sheet which could be used uniformly by manufacturers. The task force will be formed within the next two to three weeks. The timetable for completion of this project was not set; a goal of one year was discussed.

There was some discussion about legal considerations manufacturers may need to be aware of if a uniform set of instructions is adopted. Mr. King stressed that there are also good legal reasons why manufacturers should get the instructions right. Don Talka, UL, added that generic instructions are used for appliances; the rest of the instructions are left to individual manufacturers to highlight features of their product. This option would be left to manufacturers in this case also.

The consensus was to create a task force, and talk with CPSC to cover all points of concern. Steve Vastagh, NEMA, stated that NEMA has a standing task force on receptacle-type GFCIs; Mr. Vastagh will be the key contact person.

3. Miswired Indicator for Receptacle-Type GFCIs

UL proposed that feed-through receptacle-type GFCIs incorporate some type of visual indicator (it need not be a light) to inform the installer if the device has been miswired. Standardization of the indicator was not proposed. Mr. King suggested that a blinking light would be most effective in alerting an installer of a problem.

Mr. Packard stated that if the instructions are not read, then the indicator may be misinterpreted. He suggested that a task force be formed to address this issue. Jack Wells, Pass & Seymour, agreed that a light is effective only in conjunction with the installation instructions. In addition, Mr. Wells believes that if the indicator is not standardized, the risk is greater (especially with professional installers) that the indicator will be misunderstood if GFCIs of different manufacturers are used. He added that the success of multiple changes already undertaken--label over Load terminals, and improved instruction sheets--should be evaluated prior to adding the indicator.

It was also suggested that a small night light could be used in lieu of a built-in indicator. Mr. Vastagh had a small night light, which he noted he carries to test GFCIs; it was shown as an example of a small night light which could be included/packaged with current GFCIs to

provide a light for testing the installation. Mr. Vastagh stated that the requirement for a built-in indicator would have a major financial impact on the industry and makes certain assumptions about its success: It is not known that this feature will provide the intended solution. Mr. King countered that most manufacturers already produce a GFCI which incorporates a light; a lot could be gained for a relatively modest financial impact.

Bill Rose, Hubbell, suggested that perhaps a label, informing the consumer to plug in a lamp or small appliance during the test procedure, could be used. This solution would be much less expensive and, possibly, more effective since the consumer would not need to look in the instructions to find out what an indicator meant. Mr. Medford stated that CPSC Chairman Ann Brown would not be happy with another label.

Don Talka, UL, summed up by stating that the proposed indicator is just one of many improvements which, together, will lead to the desired end result--proper installation. The proposed effective date of 18 months was unchanged. Mr. Talka agreed that, if information became available that demonstrated that the label and improved instructions provide a complete solution, UL will reconsider their position.

4. Future Actions for GFCIs

Mr. King from the CPSC staff stayed for this portion of the meeting and reports the following summary. Mr. King noted at the meeting that the discussion regarding future actions for GFCIs was applicable to all types of general purpose GFCIs and not limited to receptacle-type models. Mr. King indicated that CPSC staff is interested in GFCI designs that provide more passive help for consumers. For example, a GFCI that reduced the burden that consumers need to monthly test their GFCIs in order to establish that they are in working order. Such a design might provide an electronic "self-test" circuit that would monitor the electronic circuitry of a GFCI and remove electrical power from the output of the GFCI if a failure of a critical electronic component were detected. Mr. King acknowledged that such an enhanced GFCI may still need a test button to establish that the mechanical parts of the GFCI were operational and to provide the consumer with a positive indication of the GFCI's ability to provide shock protection.

Industry representatives indicated that safety requirements for such enhanced GFCIs should not precede the development of the products. UL indicated that it was prepared to accept submittals of new designs of GFCIs and will evaluate the enhanced features. Following such an investigation, UL would propose new requirements to recognize significant safety improvements. Mr. King suggested that GFCIs with significantly enhanced features could be distinguished as a new class of GFCI and assigned a new class designation (current designs of GFCIs are designated as Class A and Class B types). Mr. King indicated that CPSC would consider the enhanced features of new GFCIs with regard to information provided to consumers and with regard to the staff position on new code proposals calling for the use of such products.

At the request of one GFCI manufacturer, a brief discussion was held on the application of GFCIs on high pressure spray washers. Mr. King indicated that the original requirement in the National Electrical Code was based on a proposal submitted by the CPSC staff. Subsequent revisions of the original requirement were based on information received by CPSC staff from Underwriters Laboratories. One revision to the code involves a certain exception to the basic requirement for intergral GFCI protection for these appliances based on the safety provided by double insulated products equipped with two conductor, non-grounding power cords.

An additional report on the meeting will be issued by Underwriters Laboratories.